The nest, eggs and chicks of the White-winged Flufftail *Sarothrura ayresi*

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The genus *Sarothrura* (flufftails) is endemic to Africa and Madagascar and includes nine species of small rails (length 13.5–17 cm) which inhabit dense ground vegetation of wetlands, grasslands, forest and dense bush (Taylor & van Perlo 1998). Most species are extremely shy and difficult to observe, and are usually located only by their very distinctive calls. Two species are classed as globally Endangered: Slender-billed Flufftail *S. watersi* of Madagascar and White-winged Flufftail *S. ayresi* of mainland Africa (Stattersfield & Capper 2000). The only known populations of White-winged Flufftail occur in highland marshes near Addis Ababa, Ethiopia, and, 4,000 km to the south, in mainly highland marshes of eastern South Africa, where the species is regarded as Critically Endangered (Taylor 2000). Its total numbers are estimated at 210–215 pairs, confined to two marshes in Ethiopia, and 235 individuals in South Africa (Taylor & van Perlo 1998).

In Ethiopia White-winged Flufftail breeds in July–August, in high-altitude seasonal marshes dominated by grasses, forbs and short sedges (Taylor & van Perlo 1998). The species is recorded from its breeding areas only in June–September, outside which period there is only one country record, from a lower altitude permanent marsh in May (Taylor 1994, Taylor & van Perlo 1998). South African records fall mainly in the period October-March inclusive, with isolated records in May, August and September, whilst there are also records from Zimbabwe in January–March 1977 and 1979, and one from Zambia in November 1962 (Taylor 1994, Taylor & van Perlo 1998). The species is assumed to migrate from Ethiopia to South Africa during the non-breeding season, as there is little overlap in occurrence dates between its two centres of distribution and also because there is no evidence that the species breeds anywhere in southern Africa, where it occurs mainly in tall, permanent reed and sedge marshes, which are very different to its breeding habitat in Ethiopia (Taylor & van Perlo 1998, BT unpubl. obs.).

In Ethiopia, small numbers of this enigmatic species were recorded from 1939 to 1957 (Collar & Stuart 1985), after which no sighting was reported until 1984 (Massoli-Novelli 1988). In August 1995 the species was 'rediscovered' in small numbers at one of its traditional breeding sites (Atkinson *et al.* 1995). From 1996 to 1999, BT made annual visits to Ethiopia to study the species in collaboration with MW, YD and other field workers. This note describes the chicks, which were found in August 1996, and the nest and eggs, which were found in August 1999.

The nest and eggs

The principal problem encountered in studying the breeding of this species is the vulnerability to disturbance and damage of the breeding sites, and the nesting habitat, by observers walking through the vegetation. The birds nest in rapidly growing vegetation only 20–40 cm tall (Taylor & van Perlo 1998), which is very susceptible to damage by trampling. The smaller of the two known breeding sites also suffers significant disturbance and damage by grazing livestock and by the cutting of growing *Eleocharis* sedges—the destruction of almost all of the bird's once-extensive breeding habitat in the highlands near Addis Ababa has been largely due to overgrazing and sedge cutting (Taylor & van Perlo 1998, BT & MW unpubl. obs.). In view of the bird's conservation status, and the importance of the only two known breeding sites for its survival, only very limited searches for nests were made, and great care was taken not to disturb any area more than once and to minimise the amount of damage caused by observers walking through the vegetation. Finding and describing the nest and eggs was, however, deemed essential for two reasons: (1) to establish the precise nature of the nesting habitat, so that suitable areas could be located, protected and restored in currently degraded wetlands; and (2) to clarify the bird's relationships with its congeners—for example, it had been suggested that this species lays patterned eggs (Taylor & van Perlo 1998), whereas all other flufftails lay pure white eggs.

On 12 August 1999 a nest was found by YD and BT at a wetland site near Addis Ababa. The exact location of the site is not given in order to safeguard the wetland from disturbance. The nest was in a clump of mixed vegetation dominated by *Eleocharis marginulata*, a grass (probably *Pennisetum schimperi*) and a buttercup *Ranunculus* sp. It was placed about 1 cm above the substrate, on top of a small pad of *Eleocharis* stems, probably flattened by the bird, that were woven into the nest structure. The ground was largely flat and shallowly flooded to a depth of 1–5 cm and the nest was constructed in a clump of vegetation on a small, low 'island' of moist ground slightly above the water level. The vegetation in which the nest was built was 40–45 cm high and the surrounding vegetation was 30–45 cm high, in a continuous area of similar habitat near the edge of the wetland, about 60 m from the river running along the wetland margin. The nest (Fig. 1) was a ball of woven live *Eleocharis* and grass, with a few growing *Ranunculus* leaves woven into the outside. It was quite thickly lined with long pieces of dead grass and *Eleocharis* woven around the cavity walls. The circular entrance was at the side, near the top and at an angle of *c.*40° above the horizontal. It had *Eleocharis* stems protruding from its base and running down to the ground to form a rough ramp. The entrance faced towards the outside edge of the vegetation clump and the nest was very well concealed by surrounding vegetation, with live *Eleocharis* and *Ranunculus* forming a natural cover over and around it, except in front of the entrance, where there was a small open space just large enough for the bird to stand. There was no tunnel or track through the vegetation to the nest.

Figure 1. Left: the three eggs from the nest; right: White-winged Flufftail nest, Ethiopia, 12 August 1999 (B. Taylor)

TABLE 1
Morphometrics of three eggs in the nest discovered near Addis Ababa, Ethiopia on 12 August 1999.

Length (mm)	Width (mm)	Mass (g)	Calculated volume (ml)	Calculated density (g/ml)
27.2	19.8	5.47	5.44	1.007
27.3	20.0	5.65	5.57	1.014
27.8	19.9	5.78	5.61	1.030

The female came out of the nest as the observers approached, and walked 1.5 m away to stand on an open patch of flattened *Eleocharis*, from which it flew when the observers were less than 2 m away. A few minutes later a male was flushed *c.*20 m from the nest. Ethiopian Snipe *Gallinago nigripennis* were also nesting in this habitat, and we found over 20 nests of this species while searching for White-winged Flufftail nests.

Nest dimensions (cm) were: outside height 17.5; outside width 15; entrance diameter 4.8; entrance height 5; thickness of walls and base 2.0–2.8; cavity diameter 9.8; cavity height 9.4.

The nest contained three fresh eggs which were oval, white, smooth and slightly glossy (Fig. 1). One egg was collected and is deposited in the National Museum, Addis Ababa. Egg morphometrics are given in Table 1: volumes were computed from volume = $0.51*L*W^2$ where L = length and W = width (Hoyt 1979).

The nest was visited on 17 and 31 August when it held five incubated eggs, which were slightly visible through the nest walls (D. Kotze *in litt.*). When visited again on 1 September, by YD, the nest was empty with no sign of damage or disturbance, indicating that the chicks had hatched successfully and that the incubation period was 15–16 days, assuming that one egg per day was laid from 13 or 14 August, and that incubation commenced when the clutch was complete.

The chicks

On 24 August 1996, BT visited the smaller breeding site with J. Atkins and S. Millington. While walking through very dense, continuous, 20–25-cm-tall vegetation flooded to a depth of 1–10 cm (most parts had at least 5 cm of standing water) and before dusk, at about 18.00 h, BT found a female White-winged Flufftail running through the vegetation, very unwilling to fly. All the observers stopped immediately and examined the ground, while the female ran around agitatedly. One small black downy chick was found sitting in a footprint on flattened grass. When picked up to ascertain whether it had been injured, the chick called repeatedly with loud, rather harsh cheeps.

A second chick then began to call from another trampled spot, and was also picked up and examined. The female, attracted by the calls, ran around uttering quiet quacking notes and occasional quiet gulps and subdued, repeated *grg* and *crk* notes. A third chick was also found, but sadly it had been stepped on in dense vegetation as the observers approached; this chick was collected and is deposited in the ornithological collection of the National Museum, Addis Ababa. The two uninjured chicks were placed on the ground near the female, who led them into cover. Shortly afterwards a male flew from partially trampled vegetation *c.*30 m from the spot where the chicks had been found. A few minutes before this observation, another chick, possibly from another brood, was heard calling in similar vegetation about 100 m away.

The age of the chicks examined was judged to be two days, from observations of other flufftail species (Taylor 1994). The collected chick weighed 5.4 g and had black down, grey eyelids, blackish-brown eyes and grey-black legs and feet. The bill was shallowly conical with a chisel-like tip to the upper mandible; it had a pinkish-white base, a 1 mm-wide black vertical band immediately in front of the nostril, and an ivory tip. There was no egg tooth. The stomach contained Coleoptera (Dytiscidae) imagines, Diptera larvae (Tipulidae and Tabanidae), and the remains of small crustaceans.

Discussion

White-winged Flufftail is atypical of its genus in several respects: it has white secondaries (a character shared with the small rails of the genus *Coturnicops* of Asia and the Americas); it shows very reduced sexual dimorphism in the plumage; it apparently has a limited vocal repertoire and normally makes advertising calls

only for a short period at dawn and dusk; it rarely responds to playback of its calls; and it is often easy to flush (Taylor 1994, Taylor & van Perlo 1998). Also, unlike other flufftails, when breeding it has never been heard to make any advertising or territorial call, or to respond to playback of any of its calls (Taylor & van Perlo 1998, BT unpubl. obs.). Its eggs and chicks are typical of the genus, and it is now clear that this species does not lay patterned eggs, as was suggested by Taylor & van Perlo (1998) on the basis of two unidentified clutches of patterned eggs found in cup-shaped grass nests in a seasonal wetland in Zimbabwe in the 1950s, and thought possibly to be flufftail nests (D. Parkes *in litt.*). White-winged Flufftail's ball-shaped nest differs from those of other wetland and grassland flufftails such as Red-chested *S. rufa*, Streaky-breasted *S. boehmi* and Striped Flufftails *S. affinis*, which build a cup or bowl, sometimes with a loosely woven canopy of live vegetation (Taylor & van Perlo 1998).

Other flufftail species have a nest-building period of 2–3 days, usually lay eggs at daily intervals and incubate the clutch for 14–18 days (Taylor & van Perlo 1998). Assuming that White-winged Flufftail also takes 2–3 days to build its nest, the chicks seen on 24 August 1996 would have been hatched from eggs laid in the first few days of August in a nest constructed at the end of July. Only one week before this, on 24 July 1996, no White-winged Flufftails were seen at the site and the vegetation was deemed too short and sparse for occupation by the birds (J. Atkins *in litt.*), which presumably started nesting almost immediately after their arrival during the last week in July. The nest found on 12 August 1999 would probably have been built at the end of the first week in August; a visit by BT and YD to the site on 4 August showed that the vegetation was only just reaching the height and density to provide adequate cover for the birds, only two of which (both males) were flushed.

The only other record of a young White-winged Flufftail is that of an unfledged juvenile collected at Sululta, Ethiopia on 22 September 1948 (Gadjacs & Keve 1968), and described in detail by Taylor & van Perlo (1998). This specimen is a male, well feathered on the head and body and with growing remiges. Based on the known growth rate of other *Sarothrura* species' chicks (Taylor 1994), this bird is estimated to be about 16 days old, and was thus probably hatched from an egg laid in the third week of August.

Our observations suggest that White-winged Flufftails begin to nest almost immediately after their arrival, which coincides with the development of the vegetation to a height of 20–40 cm and before the ground becomes entirely flooded. This offers some support to the suggestion by Keith *et al.* (1970) that the migratory Streaky-breasted Flufftail may 'represent the White-winged Flufftail ecologically' in central and southern Africa. In this region, Streaky-breasted Flufftails begin nesting almost immediately after their arrival in temporarily inundated vegetation which, although grass-dominated, is often relatively sparse, of a similar height to that used by White-winged Flufftails in Ethiopia, and occurs on moist to shallowly flooded ground (Hopkinson & Masterson 1984, Taylor & van Perlo 1998).

Our observations also suggest that White-winged Flufftails move their chicks to more deeply and continuously flooded areas of denser vegetation very soon after hatching, and such behaviour might provide some degree of protection for the chicks, as the nest sites would be vacated before the vegetation had grown sufficiently to make it suitable for cutting by local people.

The basic information on the breeding habitat, nest and eggs of White-winged Flufftail having been obtained, BT hopes that future work on this species in Ethiopia will give priority to locating new breeding sites and rehabilitating degraded wetlands to recreate suitable breeding habitat. Further disturbance of nesting birds to obtain more information on the nest and eggs would be unjustified, and the best method of obtaining detailed information on the breeding of this species would seem to be captive breeding, which has provided much important information for other wetland flufftails (Wintle 1988, Taylor 1994, Taylor & van Perlo 1998).

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Noteworthy ornithological records from Rondônia, Brazil, including a first country record, comments on austral migration, life history, taxonomy and distribution, with relevant data from neighbouring states, and a first record for Bolivia

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Located in the south-west of Brazil's immense Amazon region is the state of Rondônia. Rivers play a major role in the state's geography with the rio Madeira dissecting the western section as it flows north-east into the Amazon. Furthermore, the borders with Bolivia are defined by the rios Mamoré, Guaporé and Branco. The state's largest river, the Madeira, acts as a major barrier to many species of birds, animals and plants, which occur on only one side (Haffer 1992). Further east is the rio Tapajós, flowing north-east and forming another major physical barrier to species distribution. The area of land between these two major Amazon tributaries is known as the 'Rondônian area of endemism', and contains many unique bird taxa (Haffer 1974, Cracraft 1985). The Rondônian endemic centre encompasses almost all of Rondônia, with the exception of the extreme west, on the left bank of the rio Madeira, bordering Amazonas and Acre. The presence of this rich endemic centre makes Rondônia of very high conservation importance, due not only to the large number of endemics but also the extremely high indices of deforestation (Fearnside 1987, 1989). Thus the fauna and flora of Rondônia are some of the most threatened within all of Brazilian Amazonia.

Little has been published on the avifauna of Rondônia. Natterer collected along the rios Madeira and Guaporé, whilst von Pelzeln (1868–1871) and Hoffmann concentrated along the lower rio Ji-Paraná and rio Madeira (Hellmayr 1910). More recently, intensive ornithological field work was conducted along the middle rio Ji-Paraná (or 'Machado' as it is known locally), at Cachoeira Nazaré (09°44'S, 61°53'W) and Pedra Branca (10°02'S, 62°06'W) by Stotz *et al.* (1997), resulting in